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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/715,854

11/19/2003

Naomi Kaneko

OGO:109A

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EXAMINER

MALDONADO, JULIO J

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

11A

Office Action Summary

Application No.

10/715,854

Applicant(s)

KANEKO ET AL.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-27 is/are rejected.
- 7) ☒ Claim(s) 28-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20031119.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 13 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al. (U.S. 6,310,674 B1).

Suzuki et al. teach a method of forming a display device such as an STN mode color LCD (column 1, lines 11 – 17) including the steps of depositing an oxide conductive film consisting of an amorphous material on a substrate at a temperature equal to or less than the crystallization temperature, wherein said conductive film is an ITO film; and crystallizing the oxide conductive film by heating (column 5, lines 2 – 30).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 14-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. 6,310,674 B1) as applied to claims 13 and 18 above, and further in view of the following comments.

In reference to claim 14-16, Suzuki et al. teach a method of forming an oxide including the steps of depositing an oxide conductive film consisting of an amorphous material on a substrate at a temperature of 100°C or less; and crystallizing the oxide conductive film by heating at temperatures of 150-300°C (column 5, lines 2 – 30).

Suzuki et al. fail to teach for wherein in the step of forming an oxide conductive film, the oxide conductive film is heated at a temperature of 150°C or less; and wherein in the step of crystallizing the oxide conductive film, the oxide conductive film is heated at a temperature equal to or less than the crystallization temperature; and wherein in the step of crystallizing the oxide conductive film, the oxide conductive film is heated at a temperature equal to or less than the glass transition temperature of the substrate. However, the submitted disclosure teaches crystallizing the oxide conductive film at a temperature in the range of 150°C to 200°C (Instant page 8, lines 8 – 14). And in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. MPEP 2144.05. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the ranges disclosed in the disclosure to arrive at the claimed invention. Furthermore, since the crystallization temperature disclosed in Suzuki et al. overlaps the crystallization temperature disclosed in the submitted specification, Suzuki et al. teach upon the claimed limitation, that is, wherein in the step of crystallizing the oxide conductive film,

the oxide conductive film is heated at a temperature equal to or less than the crystallization temperature and equal to or less than the glass transition temperature of the substrate.

In reference to claim 19, Suzuki et al. substantially teach all aspects of the invention, but fail to teach wherein the oxide conductive film has a tin oxide content of less than 5% by weight. However, the selection of the claimed range is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species to obtain a desired oxide conductive film. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the above-mentioned range to arrive at the claimed invention.

In reference to claims 20-23 and 26, Suzuki et al. teach wherein said deposited conductive film has a high amorphous degree; and crystallizing said film by heating (column 5, lines 2 – 20). Suzuki et al. fail to expressly teach wherein said conductive film has 200nm or less average grain size dispersed in an amorphous matrix; wherein after crystallizing, the conductive film is transformed into an aggregate of randomly-oriented crystals having an average grain size between about 20nm and 500nm. However, the same materials are treated the same way, and therefore, the same results are obtained. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Suzuki et al. teach upon the claimed limitations.

In reference to claim 27, Suzuki et al. further teach forming a transparent coating film on a surface of the electrode, the transparent coating film containing a synthetic

resin (column 6, lines 29 – 65). Suzuki et al. fail to teach wherein said resin has a volume resistance in the range of $10^2 \Omega \cdot \text{cm}$ to $10^{12} \Omega \cdot \text{cm}$. However, the selection of the volume resistance is obvious to one of ordinary skill in the art at the time the invention was made because it is a matter of determining optimum process condition by routine experimentation with a limited number of species to obtain desired device specifications.

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. 6,310,674 B1) as applied to claims 13 and 18 above, and further in view of Murakami et al. (U.S. 5,677,240).

Suzuki et al. substantially teach all aspects of the invention but fail to disclose wherein the step of crystallizing the oxide conductive film is carried out in an atmosphere free of oxygen. However, Murakami et al. teach a method of forming an ITO layer, wherein the process further includes annealing the formed ITO film in a nitrogen or hydrogen atmosphere in order to avoid degradation of the final device that caused by the presence of oxygen during the anneal (column 2, lines 4 – column 4, line 14).

6. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. 6,310,674 B1) as applied to claims 13 and 18 above, and further in view of the Applicants' Admitted Prior Art.

Suzuki et al. teach wherein said substrate is a glass substrate, but fail to teach wherein the substrate is a synthetic resin having an undercoat film made of an organic material. However, the prior art teaches forming an oxide conductive film for an STN

mode color LCD on a synthetic resin substrate having an undercoat film made of an organic material, wherein the synthetic resin has the advantage over the glass substrates of being light weight and difficult to break (Instant page 1, line 10 – page 4, line 25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Suzuki et al. and the prior art to enable using a resin substrate in the embodiment of Suzuki et al. as taught by the prior art. Furthermore, It would have been within the scope of one of ordinary skill in the art to combine the teachings of Suzuki et al. and the prior art to enable using a substrate in Suzuki et al. to be performed according to the teachings of the prior art because one of ordinary skill in the art at the time the invention was made would have been motivated to look to alternative suitable methods of forming the disclosed transparent layer in a substrate according to Suzuki et al. and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

Allowable Subject Matter

7. Claims 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record teaches away from forming an organic film prior to patterning said ITO film.

Conclusion


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the customer service number for group 2800 is (703) 306-3329.

Updates can be found at <http://www.uspto.gov/web/info/2800.htm>.

Julio J. Maldonado
January 22, 2005

Julio J. Maldonado
Patent Examiner
Art Unit 2823


George Fourson
Primary Examiner